



Q&A with Melissa Blackman 2009 Porter Fellow

Who are you?

Melissa Blackman

Where were you born?

Trinidad and Tobago

What childhood experiences led to your interest in science? Why did you decide to study science?

I can't say if there were specific experiences in my childhood that led to my interest in science. I guess I became interested in science because I was very curious as a child and science seemed to be the class that most peaked my interest. But I do remember most liking my lab courses in high school but I did not really become exposed to research until undergrad when I did my first summer research internship at the end of sophomore year and I guess I have been hooked since then.

Where did you attend school/university and how did you decide on the school?

For Undergrad I attended the University of Maryland, Baltimore County (UMBC). I decided to attend UMBC because it had a great biology program and it was not too far from my family. We had just emigrated from Trinidad and Tobago to Washington, D.C. so being close to family was very important

How did you become interested in physiology specifically?

I guess it was my interest in physiology that got me interested in being a science major in undergrad; more specifically I was driven into the scientific field by an interest in the mechanisms of brain function. This grew out of my personal contact with mental disease, as my aunt was mentally ill. As a child I would wonder what caused her behavior, one day she was "normal" and the next day she was a completely different person struggling through an "episode". My experiences have helped in developing and reinforcing my desire to obtain a PhD in Neuroscience. It is my hope that by understanding brain function I can contribute research that creates strategies to help shed light on mental disorders.

What is your current position?

I am a graduate student in the Neuroscience Department at Brandeis University in the Lab of Gina Turrigiano.

How did you decide on your current career path?

Once I graduated from UMBC I knew that I wanted to continue my education and pursue a PhD in Neuroscience. I was interested in a graduate program that had great breadth and approached problems in neuroscience from many different levels from the molecular to the cellular to the entire organism. At Brandeis University the research is multidisciplinary and is also very collaborative. As an undergraduate I did summer research at Brandeis in the lab of Dr. Eve Marder. I became familiar with the people and environment and believe that the support and attention that I received from everyone would provide an excellent training environment that would be instrumental in helping me develop into a first-rate research scientist.

How did you get there? What do you do within that position?

At Brandeis I did rotations in four labs and decided on joining the lab of Dr Turrigiano. The lab uses a combination of electrophysiology, imaging and molecular techniques to study synaptic plasticity mechanisms in the visual cortex and the role that activity plays in the modification of these mechanisms at synapses. This research greatly excited me since I believe that understanding the underlying mechanisms of synapse formation and their modification during development and by experience, could help in shedding light on the mechanisms of learning and memory. This knowledge can help elucidate the cause of diseases that result when there are errors in the establishment and regulation of the neural network.

Describe your work in lay terms.

My research project will examine synapse formation and function in the mental disorder Rett Syndrome (RTT). RTT is a progressive neurodevelopment disorder and is a leading cause of mental retardation in females. The disorder is associated with both mental and motor impairments. A majority of RTT cases are associated with mutations in the gene coding for the protein Methyl CpG binding protein 2 (MeCP2). My work will use a combination of electrophysiology, immunocytochemistry and time-lapse imaging to characterize the role of MeCP2 in synapse formation and function. I will use cultured visual cortical neurons which my lab has extensively used to study synapse formation and function. To manipulate MeCP2 levels RNAi will be used to knockdown MeCP2 in individual neurons in my culture system to determine how a loss of MeCP2

affects synapse formation and function. The results of these experiments will shed light on the pathophysiology of the disease by determining whether, in RTT, synapse formation and function is altered in the neurons of RTT patients and may underlie some of the symptoms of the disease.

What are your outside interests?

What do you do for fun?

I like to watch movies, read and try new restaurants in the Boston area with my friends.

What advice would you give...

- **a precollege student considering a career in physiology? Or an undergraduate student considering a career in physiology?**
 - *Take your interest beyond the classroom and try to do some lab research either during your school year or during the summer. My various undergrad research experiences greatly shaped my direction and interest in Neuroscience.*
- **a graduate student in physiology, a postdoctoral fellow, or a new investigator?**
 - *Be willing to take undergrads into your lab, the experience that you give these student helps shapes their interest in a particular field of study. Also your mentoring helps build their confidence in themselves and their ability to achieve their dreams.*

Please list any recent publications you have had published in APS Journals.

N/A